

AMENDMENTS TO THE DRAWINGS

The replacement drawing sheets (Nos. 1-22) presented in Attachment A include Figures 1-30. Figures 1, 9, 11, 15, 17, 19, 21, 24, 26, 28 and 30 have been amended to include descriptive labels. Figures 3, 7, 18(b), 23(a) and 28 have been amended to include feature lines. Figure 7(b) has been amended to reflect the correct figure reference number. No new matter has been added.

The replacement sheets (Nos. 1-22) replace all previous drawing sheets.

Attachment A: Figures 1-30

Rejection Under 35 USC §103

Claims 3 and 19 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Wirtz in view of U.S. Patent No. 5,751,856 to Hirabayashi et al. ("Hirabayashi"). The Examiner contends that Wirtz discloses most of the features of the claimed invention. However, the Examiner acknowledges that Wirtz does not disclose compressing each orthogonally-transformed evaluation vector to reduce the amount of processing needed. The Examiner relies on Hirabayashi as disclosing an image compression method in which the high frequencies of the image are masked so that the energy from the orthogonally-transformed image data is concentrated in the low frequency band, thereby reducing the number of data items. See, Hirabayashi, col. 1, lines 26-49. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz and Hirabayashi to achieve the claimed invention.

With respect to the rejection of claim 19, Applicants have amended independent claim 19 to recite:

a template image processing part operable to input a template image and calculate an edge normal direction vector of said template image, normalize said edge normal direction vector of said template image, generate an evaluation vector from said normalized edge normal direction vector.

As discussed above with respect to claims 1 and 2, Wirtz does not disclose normalizing the edge normal direction vector and generating an evaluation vector based on the normalized edge normal direction vector. Furthermore, Applicants submit that Hirabayashi neither discloses, nor suggests, normalizing the edge normal direction vector, or generating an evaluation vector based on the normalized edge normal direction vector. Therefore, the

Claim 4 depends from claim 2. Accordingly, Applicants submit that claim 4 is patentable for at least the same reasons as discussed above with respect to claim 2. Thus, the combination of Wirtz, Hirabayashi, and Thebaud does not disclose or suggest the invention of claim 4. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 4. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claims 5 and 14 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz in view of U.S. Patent No. 5,905,807 to Kado et al. (“Kado”). The Examiner acknowledges that Wirtz does not disclose normalizing the evaluation vector with respect to a vector length. However, the Examiner cites Kado, col. 5, lines 1-16; col. 5, lines 21-33; and col. 6, lines 5-12, and contends that Kado discloses normalizing and converting edge vectors extracted from an input facial image into either unit vectors or zero vectors, processing positive and negative signs of the unit vectors. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz and Kado to achieve the claimed invention.

Applicants submit that Kado does not disclose or suggest “normalizing said first edge normal direction vector” and “generating a first evaluation vector from said edge normal direction vector of said specified image for said template image based on said normalized first edge normal direction vector” as demonstrated to be missing from Wirtz, as discussed above with respect to independent claim 2.

Honsinger, col. 10, lines 52-63, and contends that Honsinger discloses using the conjugate symmetry properties of the Fourier transform to halve the amount of data needed. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz and Honsinger to achieve the claimed invention.

Applicants submit that Honsinger neither discloses nor suggests “normalizing said first edge normal direction vector” and “generating a first evaluation vector from said edge normal direction vector of said specified image for said template image based on said normalized first edge normal direction vector” as demonstrated to be missing from Wirtz, as discussed above with respect to independent claim 2.

Claim 7 depends from claim 2. Accordingly, Applicants submit that claim 7 is patentable for at least the same reasons as discussed above with respect to claim 2. Thus, the combination of Wirtz and Honsinger does not disclose or suggest the invention of claim 7. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 7. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claim 10 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz in view of U.S. Patent No. 5,781,650 to Lobo et al. (“Lobo”). The Examiner acknowledges that Wirtz does not disclose that the template image is an image of a typified face. However, the Examiner cites Lobo, col. 4, lines 44-49 and col. 4, line 64 through col. 5, line 48, and contends that Lobo discloses a process for automatically finding facial images of a human face in digital images. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz and Lobo to achieve the claimed invention.

Applicants submit that Lobo neither discloses nor suggests “normalizing said first edge normal direction vector” and “generating a first evaluation vector from said edge normal direction vector of said specified image for said template image based on said normalized first edge normal direction vector” as demonstrated to be missing from Wirtz, as discussed above with respect to independent claim 2.

Claim 10 depends from claim 2. Accordingly, Applicants submit that claim 10 is patentable for at least the same reasons as discussed above with respect to claim 2. Thus, the combination of Wirtz and Lobo does not disclose or suggest the invention of claim 10. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 10. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claim 17 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz and Lobo in view of the non-patent literature entitled *Digital Image Watermarking on a Psocial Object: the Human Face* by Oh et al. (“Oh”). The Examiner acknowledges that neither Wirtz nor Lobo disclose extracting a face from the image and embedding a digital watermark in the face image. However, the Examiner cites Oh, page 538, and contends that Oh discloses a method for watermarking face regions that are segmented out as a result of face detection, and then overlaying the watermarked face regions on the original image at the same position. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz, Lobo, and Oh to achieve the claimed invention.

Applicants submit that Wirtz neither discloses nor suggests “normalizing said first edge normal direction vector” and “generating a first evaluation vector from said edge normal direction vector of said specified image for said template image based on said normalized first edge normal direction vector” as demonstrated to be missing from Wirtz and Lobo, as discussed above with respect to claims 2 and 10.

Claim 17 depends from claim 2. Accordingly, Applicants submit that claim 17 is patentable for at least the same reasons as discussed above with respect to claim 2. Thus, the combination of Wirtz, Lobo, and Oh does not disclose or suggest the invention of claim 17. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 17. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claim 18 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz and Lobo in view of U.S. Patent No. 5,990,901 to Lawton et al. (“Lawton”). The Examiner acknowledges that neither Wirtz nor Lobo discloses extracting the face image from the original image, editing only the face image, and then combining the edited face image with the original image. However, the Examiner cites Lawton, col. 8, lines 51-64; col. 9, lines 18-24; and col. 9, lines 32-47, and contends that Lawton discloses a method in which an image is selected for editing, and then combined with the original image. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz, Lobo, and Lawton to achieve the claimed invention.

Applicants submit that Lawton neither discloses nor suggests “normalizing said first edge normal direction vector” and “generating a first evaluation vector from said edge normal direction vector of said specified image for said template image based on said normalized first edge normal direction vector” as demonstrated to be missing from Wirtz and Lobo, as discussed above with respect to claims 2 and 10.

Claim 18 depends from claim 2. Accordingly, Applicants submit that claim 18 is patentable for at least the same reasons as discussed above with respect to claim 2. Thus, the combination of Wirtz, Lobo, and Lawton does not disclose or suggest the invention of claim 18. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 18. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claim 20 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz and Hirabayashi in view of Thebaud. The Examiner acknowledges that neither Wirtz nor Hirabayashi discloses recording the orthogonally-transformed evaluation vector. However, the Examiner cites Thebaud, col. 20, lines 23-30, and contends that Thebaud discloses a method where a template is Fourier transformed and then stored before it is compared to an input image. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz, Hirabayashi, and Thebaud to achieve the claimed invention.

Applicants submit that Thebaud neither discloses nor suggests “normalizing said first edge normal direction vector” and “generating a first evaluation vector from said edge normal

direction vector of said specified image for said template image based on said normalized first edge normal direction vector” as demonstrated to be missing from Wirtz and Hirabayashi, as discussed above with respect to claims 4 and 19.

Claim 20 depends from claim 19. Accordingly, Applicants submit that claim 20 is patentable for at least the same reasons as discussed above with respect to claim 19. Thus, the combination of Wirtz, Hirabayashi, and Thebaud does not disclose or suggest the invention of claim 20. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 20. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claim 21 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz, Hirabayashi, and Thebaud in view of U.S. Patent No. 5,535,288 to Chen et al. (“Chen”). The Examiner acknowledges that Wirtz, Hirabayashi, and Thebaud do not disclose a conjugate compression unit located between the recording unit and multiplication unit, and a conjugate restoring unit located between the multiplication unit and the inverse orthogonal transformation unit. However, the Examiner cites Chen, col. 9, lines 34-53 and col. 10, lines 4-11, and contends that Chen discloses a method of using Discrete Fourier Transforms (DFTs) to reduce the amount of data being multiplied, and using Inverse DFTs to restore the data. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz, Hirabayashi, Thebaud, and Chen to achieve the claimed invention.

Applicants submit that Chen neither discloses nor suggests “normalizing said first edge normal direction vector” and “generating a first evaluation vector from said edge normal

direction vector of said specified image for said template image based on said normalized first edge normal direction vector” as demonstrated to be missing from Wirtz, Hirabayashi, and Thebaud as discussed above with respect to claims 4 and 19.

Claim 21 depends from claim 19. Accordingly, Applicants submit that claim 21 is patentable for at least the same reasons as discussed above with respect to claim 19. Thus, the combination of Wirtz, Hirabayashi, and Thebaud does not disclose or suggest the invention of claim 21. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 21. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claim 27 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz, Hirabayashi, and Thebaud in view of Kado. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz, Hirabayashi, Thebaud, and Kado to achieve the claimed invention.

As discussed above with respect to claims 5 and 14, Applicants submit that Kado neither discloses nor suggests “normalizing said first edge normal direction vector” and “generating a first evaluation vector from said edge normal direction vector of said specified image for said template image based on said normalized first edge normal direction vector.” These features were demonstrated to be missing from Wirtz, Hirabayashi, and Thebaud, as discussed above with respect to claims 4 and 19.

Claim 27 depends from claim 19. Accordingly, Applicants submit that claim 27 is patentable for at least the same reasons as discussed above with respect to claim 19. Thus, the

combination of Wirtz, Hirabayashi, Thebaud, and Kado does not disclose or suggest the invention of claim 27. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 27. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claim 30 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz and Hirabayashi in view of Oh. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz, Hirabayashi, and Oh to achieve the claimed invention.

As discussed above with respect to claim 17, Applicants submit that Oh neither discloses nor suggests “normalizing said first edge normal direction vector” and “generating a first evaluation vector from said edge normal direction vector of said specified image for said template image based on said normalized first edge normal direction vector.” These features were demonstrated to be missing from Wirtz and Hirabayashi, as discussed above with respect to claims 2 and 19.

Claim 30 depends from claim 19. Accordingly, Applicants submit that claim 30 is patentable for at least the same reasons as discussed above with respect to claim 19. Thus, the combination of Wirtz, Hirabayashi, and Oh does not disclose or suggest the invention of claim 30. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 30. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claim 31 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz and Hirabayashi in view of Lawton. The Examiner contends that it would have been obvious to one of ordinary skill in the art at the time of the invention to combine Wirtz, Hirabayashi, and Lawton to achieve the claimed invention.

As discussed above with respect to claim 18, Applicants submit that Lawton neither discloses nor suggests “normalizing said first edge normal direction vector” and “generating a first evaluation vector from said edge normal direction vector of said specified image for said template image based on said normalized first edge normal direction vector.” These features were demonstrated to be missing from Wirtz and Hirabayashi, as discussed above with respect to claims 2 and 19.

Claim 31 depends from claim 19. Accordingly, Applicants submit that claim 31 is patentable for at least the same reasons as discussed above with respect to claim 19. Thus, the combination of Wirtz, Hirabayashi, and Lawton does not disclose or suggest the invention of claim 31. Therefore, the Examiner has failed to meet the burden of establishing a *prima facie* case of obviousness over claim 31. Applicants respectfully request reconsideration and withdrawal of the rejection.

Claims 32-35 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Wirtz and Lobo in view of U.S. Patent No. 6,529,630 to Kinjo and further in view of U.S. Patent Publication 2001/0014182 to Funayama et al. (“Funayama”). The Examiner acknowledges that Wirtz and Lobo neither disclose nor suggest extracting the face image, calculating a feature that corrects the face image, determining a correction function on the basis of the feature, and

